

**Final Report**  
**White-nose Syndrome Grants to States**  
**F14AP00731**

South Carolina Department of Natural Resources (SCDNR)  
August 31, 2014-September 30, 2016

**Project Title:** South Carolina White-nose Syndrome State Support

This was a multi-faceted project with the bulk of the funding directed toward completion of a South Carolina Bat Conservation Plan. This state support grant was extended to September 30, 2016 and the grant was modified on June 7, 2016 with a final reporting deadline of December 29, 2016. This was the third and final extension. Delays were due to the inability of NWCOA to provide on-line bat standards training as they had planned. We therefore had to modify our Objective 2 to allow us to expend some funding to support other white-nose syndrome (WNS) related needs.

Objective 1: We proposed to continue to ship rabies negative bats from the South Carolina Department of Health and Environmental Control (SCDHEC) and samples from bat die-offs to the Southeastern Cooperative Wildlife Disease Study (SCWDS).

Accomplishments:

On March 25, 2014 and September 18, 2014, Christy Jeffcoat, supervisor of the virology and rabies lab at SCDHEC, indicated that they would save any colonial cavity roosting species of bat (excluding free-tailed bats) for SCDNR pick-up. Unfortunately, a subzero freezer at SCDHEC stopped working and SCDHEC was unable to save any bats from the 2014-15 winter months. They [SCDHEC rabies testing lab] declined my offer to provide them with a small freezer. On July 7, 2015, the SCDNR director sent a letter to the SCDHEC director requesting continued cooperation on WNS surveillance, at the urging of our USFWS liaison (Appendix I). We did purchase coolers in preparation for shipping any suspect bats and SCDHEC saved specimens. Those coolers are earmarked for WNS surveillance and will be useful for future submissions. A later WNS grant (F15AC00694) that overlaps this one due to extensions included 14 rabies-negative bat submissions. The only reports of winter/spring dead bats from the public were free-tailed bats that died when a coastal Nuisance Wildlife Control Operator (NWCO) attempted exclusion improperly during cold weather. We also had a report of a “dead” bat on a sidewalk near the stadium at Clemson University however no dead (or live) bat was found. The Clemson University stadium frequently has unwanted free-tailed bats. On November 30, 2015 we received a report of bats flying at mid-day, over several previous days, in Northern Greenville County near Oil Camp Creek. No dead/down bats were found for testing.

Significant deviations:

There were no significant deviations. Although we had no bats saved by SCDHEC due to their freezer failure, we did get confirmation they are once-again saving bats. Bats collected and shipped in 2016 are reported in the F15AC00694 interim report.

Objective 2: We proposed to continue outreach to NWCOs about bat submissions for WNS and personal decontamination, and about upcoming National Bat Exclusion certification on-line training. This includes providing some of the online training for key personnel including one SCDHEC and one SCPRT partner.

### Significant deviations:

We had to file 3 extensions for this WNS State Support grant because the National Wildlife Control Operators Association (NWCOA) on-line training is not yet available (part of Objective 2 hinged on this training being available on-line). The NWCOA online training is not available as of the completion date of this report. The USFWS was prudent in allowing SCDNR to modify the grant to service other WNS-related needs.

### Accomplishments:

On October 8, 2014, we mailed all NWCOs on the Wildlife Control Operator list (<http://www.dnr.sc.gov/wildlife/docs/nwco.pdf>) with bats listed under the species handled heading (132 listed) an informational letter, a copy of the National White-Nose Syndrome Decontamination Protocol (printed from the [whitenosesyndrome.org](http://whitenosesyndrome.org) website) and the color copy of the White-Nose Syndrome Fact Sheet, August 2014 at <https://www.whitenosesyndrome.org/resource/white-nose-syndrome-fact-sheet-august-2014>.

The informational letter (Appendix II) included the latest northern long-eared bat (NLEB) listing information at the time; it also requested that they cooperate with a Clemson University graduate student interested in surveying WCOs, and advised them of upcoming NWCOA minimum bat standards training. The principal investigator reviewed several versions of the pre-training questionnaire, and one version of the post-training questionnaire, prepared by a Clemson University graduate student, Glenda Lofink, to test the efficacy of planned NWCOA on-line bat standards training. Because South Carolina does not certify or test WCOs, this is an opportunity to better understand if the training will significantly improve WCO knowledge on exclusion techniques and WNS. Through this grant we provided travel support for the graduate student to attend the NWCOA Wildlife Expo in Myrtle Beach. She did take and complete the NWCOA in-person minimum bat standards training. We also assisted the graduate student in finding a statistician to help her develop the questionnaires and we printed both her pre and post-training questionnaires.

Per the agreed grant modification to serve other WNS related needs we used the funds not expended on NWCOA online training for completing some 2016 WNS related goals; assistance and expansion of some summer and fall bat surveys in under-represented areas, and for acoustic analysis of calls recorded near some DNR mist netting sites targeting northern long-eared bats (part of grant F15AC00694). While no NLEBs were captured, some potential NLEB calls were confirmed by Dr. Susan Loeb and Clemson University graduate student, Ben Neece.

Table 1 provides location information and recording information for 14 nights of surveys we contracted out for analysis. The table also includes acoustic recordings done by contractors at net sites at Liberty Hill Wildlife Management Area (WMA) and Wee Tee State Forest. The call sequence from Chestnut Ridge Heritage Preserve highlighted in green indicates a potential NLEB sequence. Other call sequences reported by the company Ecological Solutions as NLEBs could not be confirmed by third party experts. This emphasizes the need for substantial call vetting for all acoustic work.

Table 1. Acoustic Summary Results: Species identified by BCID, and *Myotis* echolocation pulse sequences manually vetted by partners.

Date	Location Name	Lat	Long	BCID Species Identification <sup>a</sup>	Vetted By <sup>b</sup>	Results <sup>b</sup>
5/11/16	Cliff Pitts WMA	34.45304	-82.18445	EPFU, LANO, LABO, LACI, MYLU, NYHU, PESU		
5/12/16	Cliff Pitts WMA	34.45303	-82.18470	EPFU, LANO, LABO, LACI, MYLU, NYHU		
5/13/16	Cliff Pitts WMA	34.45312	-82.18474	EPFU, LANO, LABO, LACI, MYLU, NYHU, PESU, UNKN		
5/16/16	Cliff Pitts WMA	34.44816	-82.18458	LABO, MYLU, NYHU, PESU	ES	MYAU - ES*
5/17/16	Cliff Pitts WMA	34.44832	-82.18458	LANO, LABO, MYLU, NYHU	ES	
5/18/16	Cliff Pitts WMA	34.44833	-82.18443	LABO, MYLU, NYHU, UNKN	ES	
5/25/16	Tall Pines	35.06423	-82.55972	LANO, LABO, LACI, MYLU, NYHU, PESU	ES	
6/3/16	Chesnut Ridge HP	35.15155	-82.28088	LABO, MYSE, NYHU, UNKN	ES, SL, BN	
6/7/16	Chesnut Ridge HP	35.15155	-82.28088	MYLU, NYHU, PESU, UNKN	ES, SL, BN	MYSE - ES*
6/8/16	Chesnut Ridge HP	35.15155	-82.28088	LANO, LABO, MYLU, NYHU, PESU		
6/12/16	Chesnut Ridge HP	35.15155	-82.28088	LANO, MYLU, NYHU, PESU, UNKN		
6/16/16	Chesnut Ridge HP	35.15155	-82.28088	LABO, MYLU, PESU		
6/20/16	Chesnut Ridge HP	35.15056	-82.27928	EPFU, MYLU, MYSE, NYHU, UNKN	ES, SL, BN	MYSE - ES; MYSE/MYLE - SL, BN**
7/11/16	Pacolet River HP	34.93657	-81.77809	EPFU, LANO, MYLE, NYHU, PESU, UNKN	ES	
7/12/16	Pacolet River HP	34.93657	-81.77806	EPFU, LANO, LABO, MYLU, NYHU, PESU, UNKN	ES	
7/19/16	Poinsett Bridge HP	35.12951	-82.38426	EPFU, LANO, LABO, MYLU, MYSE, NYHU, PESU, CORA, UNKN	ES, SL, BN	MYSE/MYAU - ES*
7/20/16	Poinsett Bridge HP	35.13007	-82.38586	EPFU, MYLU, NYHU, PESU		
7/21/16	Chesnut Ridge HP	35.14039	-82.28377	EPFU, LANO, LABO, MYLE, MYLU, PESU, CORA, UNKN	ES	
7/22/16	Chesnut Ridge HP	35.14039	-82.28377	EPFU, LABO, MYLE, MYLU, PESU, CORA, UNKN	ES	
7/23/16	Chesnut Ridge HP	35.14039	-82.28377	EPFU, LANO, LABO, MYLU, NYHU, PESU, CORA, UNKN	ES	
7/24/16	Chesnut Ridge HP	35.14039	-82.28377	EPFU, LABO, LACI, MYLU, NYHU, PESU, CORA, UNKN	ES, SL, BN	MYSE - ES, BN*
7/27/16	Liberty Hill WMA	34.47949	-80.86501	LABO, MYAU, MYLU, MYHU, PESU, CORA, UNKN	ET	MYLU, UNKN, MYAU - ET
7/28/16	Liberty Hill WMA	34.53917	-80.87050	EPFU, LABO, MYAU, NYHU, PESU, UNKN	ET	MYLU, UNKN, MYAU - ET
7/31/16	Liberty Hill WMA	34.51507	-80.86411	LABO, MYAU, MYLU, NYHU, PESU, UNKN	ET	MYLU, MYAU - ET
9/20/16	Wee Tee SF	33.39807	-79.78790			CORA, PESU, MYAU - ES
9/21/16	Wee Tee SF	33.39791	-79.78814			MYAU - ES

<sup>a</sup> EPFU = *Eptesicus fuscus*, CORA = *Corynorhinus rafinesquii*, LABO = *Lasiurus borealis*, LACI = *L. cinereus*, LANO = *Lasionycteris noctivagans*, MYAU = *Myotis austroriparius*, MYLU = *M. lucifugus*, MYSE = *M. septentrionalis*, NYHU = *Nycticeius humeralis*, PESU = *Perimyotis subflavus*, UNKN = unknown

<sup>b</sup> ES = Ecological Solutions, SL = Dr. Susan Loeb, BN = Ben Neece, ET = Eco-Tech Consultants

\* Potential but unconfirmed MYSE identification

\*\* Call is consistent with MYSE/MYLE identification

Dr. Susan Loeb and Clemson University graduate student, Ben Neece, reviewed the calls identified by Ecological Solutions as NLEB recordings. Calls marked with a \*\* represent calls they confirmed as consistent with NLEBs (in green) and calls marked with \* indicate a lack of confirmation (highlighted yellow).

We contracted Ecological Solutions to conduct mist net surveys for two nights at a previously unsurveyed site, the Wee Tee State Forest in Williamsburg County. All of the netting results, to include all SCDNR affiliated netting in 2016, will be included in the F15AC00694 final report. Mist netting was paired with acoustic stationary recording. Wee Tee State Forest was acquired using Forest Legacy Funds and one significant attribute of the property was the presence of massive trees in the swamplands. No bat surveys had been conducted there previously. Unfortunately, wet weather and poor road conditions delayed surveys until September 20-September 21, 2016. Twenty-three (23) mist net nights were conducted at seven (7) sites representing two main areas: one off the main access road and swamp, and the other at Oxbow Lake forest road. This effort yielded no bat captures, however recordings from two nights detected potentially the following species: Rafinesque's big eared bat, tri-colored bat, and southeastern bat (all are tracked species in South Carolina).

Objective 3: Conduct winter counts at 4 (or more) known hibernacula (all are man-made structures).

## Accomplishments:

In our proposal in the Methods section we indicated that our partners at the SC National Guard would complete winter bat counts in their 6 underground tunnels. However, the natural resources managers at McCrady Training Site (SC Army National Guard or SCARNG) were not comfortable conducting the winter bat counts/WNS surveillance on their own. Therefore SCDNR, assisted by a contractor and SCARNG Natural Resource Management staff, conducted the winter bat counts at the 6 tunnels in Richland County. Because we had a *Pseudogymnoascus destructans* (*P.d.*) -positive bat from an unknown location in Richland County (via a SCDHEC rabies testing submission) last year, we were eager to collect swabs from bats and substrate in our only known underground site in Richland County. All swabs were sent to NWHC for testing for the WNS fungus. Results from the NWHC for the McCrady Training Site swabs (8 big browns and 1 Rafinesque's big-eared bat and 9 substrate) were negative for *P.d.*

Because we wanted to better understand how far WNS has spread into the piedmont of South Carolina, we had planned to do a winter count and swabbing at an Edgefield County goldmine. Unfortunately, the mine ownership changed from a group of amateur gold enthusiasts to a commercial mining company (Uwharrie Resources, Inc. and that company pushed the adit entrances closed and put a metal grate across the open shaft. The closure was not done using bat-friendly techniques so we did provide Uwharrie Resources Vice President, Mr. John Powers, with Bats and Mines Handbook produced by Bat Conservation International. Because we had no way to access that Edgefield County mine, we sought out another piedmont mine in the slate-belt. We obtained permission to check a mine in Union County. We refer to the site as UN01A; there 11 tri-colored bats were photographed, and 8 swabs of bats and 17 of substrate were collected on March 11, 2015. All results of swabs from the Union county mine were negative for *P.d.* The weather was warm and some of the bats were clustered (more typical of summer behavior) and easy to awaken.

Two mines in Oconee County were surveyed on March 12, 2015. One mine (on private land) has a bat-friendly gate and the other mine surveyed (Cheoeend) is un-gated on the Sumter National Forest. We swabbed in the gated mine but didn't have enough swabbing materials to swab in the other mine (but we did observe what appeared to be fungus on the muzzle of one tri-colored bat). Results from the swabbed mine/bats in Oconee County were *P.d.* positive. This site is 9 miles from the last WNS confirmed hibernaculum.

We also did a quick entrance survey/observance at the Table Rock State Park cave. No dead bats or flying bats were noted; however, a disturbing amount of evidence of human visitation was obvious. There was a worn path into the lower entrance and litter was strewn in the forest near the entrance. The park superintendent and naturalist were informed of the problem the next day (April 17, 2015). Entrance surveys were also done at two gated soapstone mine gates (on the Andrew Pickens District of the Sumter National Forest) and both mine gates were missing their locks. The locks were immediately replaced and some additional steel plates were attached using Quiksteel© to better protect the locks (in case they are being cut rather than unlocked and removed). No bats were seen near the entrance or on the landscape.

In summary, we completed one cave entrance survey in Pickens County, two mine entrance surveys in Oconee County, two Oconee County (mountains) and one Union County (piedmont) mine surveys, and six tunnel surveys in Richland County (sandhills region). Element occurrence records were submitted to the Heritage Trust database for all bat counts. Complete surveys (not including entrance surveys) are presented in Table 2. Swab results from the NWHC were negative for *P.d.* from the Union (piedmont region) and Richland County (sandhills region) sites. But the results confirmed a new site (in an already WNS confirmed county) in Oconee County. Another partner, Susan Loeb of the Southern Research Station (USFS), completed the winter count at the main Stumphouse Tunnel (Oconee County) because

she sought swabs for another project. She noted a 54% decline in tri-colored bats at this site which was also confirmed as WNS positive based on 3 dead tri-colored bats collected in March 2015 (that site was recorded as suspect in 2014). So we had two more locations within an already WNS-positive county confirmed to harbor *P.d.*, but we did not locate any *P.d.* positive sites outside the mountain region.

Table 2. Winter bat counts (from complete surveys only) in South Carolina (winter 2014-15). PESU=*Perimyotis subflavus*, CORA=*Corynorhinus rafinesquii*, MY?= *Myotis spp.*, EPFU= *Eptesicus fuscus*. M= mine, T= tunnel. OC= Oconee, U= Union, RIC=Richland

Site		Date	County	Bats	latitude /longitude (NAD 27)
Ledyard2(priv)*	M	3/12/15	OC	3 PESU*, 15 CORA	34° 56'11.00"N / -83° 04' 01.00"W
cheoeend(fed)	M	3/12/15	OC	16 PESU**	34° 55'51.62" N / -83° 4'30.32"W
UN01A (priv)	M	3/11/15	U	11 PESU (No WNS detected)	34° 48'14.93"N / -81° 47'11.16"W
McCady1 (fed)	T	2/27/15	RIC	0	34° 00'41.2N / -80° 43'31.83"W
McCady2 (fed)	T	2/27/15	RIC	1 EPFU	34° 00'44.08"N / -80° 43'17.88"W
McCady3 (fed)	T	2/27/15	RIC	4 EPFU	34° 00'48.52"N / -80° 43'05.29"W
McCady4 (fed)	T	2/27/15	RIC	0	34° 00'52.67"N / -80° 42'52.33"W
McCady5 (fed)	T	2/27/15	RIC	0	34° 01'00.6"N / -80° 42'53.7"W
McCady6 (fed)	T	2/27/15	RIC	3 EPFU, 1 CORA	34° 01'06.9" N / -80° 42'43.67"W
Stumphouse (state)*	T	3/02/15	OC	148 PESU*, 3 MY?, 6 dead PESU (WNS+)	34° 48'45.34"N / -83° 07'31.62"W

\*Swab of PESU and substrate positive for *P.d.* per NWHC report

\*\*one bat with visible fungus

#### Significant deviations:

There were no significant deviations.

**Objective 4:** Review and update the WNS Response Plan with the participation of our partners. This can include bringing in additional partners.

#### Accomplishments:

The WNS Response Plan revisions were completed via a vendor. This objective was paired with drafting the SC Bat Conservation Plan. In order to be certain that the vendor understood the WNS decontamination protocol they were required to assist with some winter bat counts. During this funding period, the NLEB was listed as federally threatened and that change was incorporated into the WNS Response plan. The updated plan is posted on the SCDNR webpage.

#### Significant deviations:

There were no significant deviations.

**Objective 5:** Develop a working draft Bat Conservation Plan for South Carolina.

#### Accomplishments:

We contracted for the development of a South Carolina Bat Conservation Plan. The request for bids was posted November 2014 and Jennifer Kindel was the successful vendor selected to complete this plan and the updates and revisions for the WNS Response Plan. Species range maps are updated maps based on the State Wildlife Action Plan guild maps; Silas K. Cox, Clemson University Experimental Forest manager (now retired) donated his time and mapping skills to the project. In addition to those from SCDNR, parties providing edits to the document included Dr. Joy O'Keefe, Center for Bat Research, Outreach and Conservation, Dr. Mary K. Clark, Moonlight Environmental Consulting, and Dr. Mark Yates, LaGrange College. On September 29, 2015 version 1 of the South Carolina Bat Conservation Plan was complete and distributed to the SCDNR Wildlife and Freshwater Fisheries Chief, Assistant Chiefs, Deputy Director and Assistant Deputy Director. The SC Bat Conservation Plan link was also provided to the new Natural Resources manager at SC Parks, Recreation and Tourism and to the South

Carolina Forestry Commission. This work is complete although the document will require regular updating to remain meaningful. To see the most current version of the South Carolina Bat Conservation Plan please visit: <http://www.dnr.sc.gov/wildlife/bats/index.html>. The SC Bat Conservation Plan is large and is presented by Chapter as a pdf document at the link provided.

#### Significant deviations:

There were no significant deviations.

**Objective 6:** Provide WNS information to the public via links on the DNR website, in news releases, and on signs at critical sites. This also includes outreach opportunity provided by the proposed 2015 Bat Blitz along South Carolina's coast.

#### Accomplishments:

The newly revised WNS Response Plan was posted on our SCDNR website. Also, SCDNR created signs (Figures 1 and 2) featuring NLEB for two state parks known to have them, Oconee and Table Rock. Both parks had reported problems with either public or staff disturbance of roosting bats. At the request of SCPRT we also provided some replacement signs for the Santee Limestone Sinks (caves) at Santee State Park. The sign (Figure 3) is an updated version of signs previously posted at the site by SCDNR in 2011. Production of another new sign for posting at WNS positive sites (Figure 4) was paid for by the Region One Heritage Preserve Management budget (one *P.d.* positive site is on Stumphouse Mountain Heritage Preserve), a non-federal funding source.

SCDNR staff created a new bat information link to provide some basic bat information along with bat exclusion information: <http://www.dnr.sc.gov/wildlife/publications/nuisance/SCbatsinbldgs.pdf>. On July 28, 2015, the Report a Bat Colony page (which was incorrectly being used by homeowners to report unwanted bats in their homes) was replaced with a new page for reporting successful bat boxes: <http://dnr.sc.gov/wildlife/bats/batbox.html>. SCDNR also started a NLEB page. We currently provide a link to the USFWS Midwest Office NLEB webpage on the SCDNR webpage. Interviews on bats/NLEBs of South Carolina were given to The State Newspaper (August 2014) and the Charleston Post and Courier in October 2014.

SCDNR provided support for the 2015 SC Bat Blitz held in Bluffton, SC. Specifically, SCDNR provided decontamination materials and information such as the bat key for Coastal SC and all of the waterproof data sheets. The local Blitz committee of Mary Socci (Palmetto Bluff Conservancy/host), Mary K. Clark (Moonlight Environmental Consulting) and Mary Bunch (SCDNR) coordinated on the WNS decontamination related issues/questions. The Blitz was well attended and each team had adequate materials for decontamination. There was a public day that offered bat related programs and some live bat demonstrations.

The SC Bat Blitz also provided an opportunity for some limited wing punch sampling to assist Dr. Marianne Moore's WNS-related research. Six sets of protein, genotype, qPCR samples were collected and four genotype only (single wing punch) samples were collected for the Moore, Devalos and Russell Skin Immune Proteins study.

A post Blitz News Release was distributed in August 2015 and a summary was also sent to the local Wildlife Society Chapter for the Southeaster Section Newsletter. Note that a Bat Blitz summary was sent to Nightwing News (they accidentally published it under North Carolina news).

Significant deviations:

There were no significant deviations.

Total Cost: \$50,811.41

Recommendations: Continue winter counts and swabbing efforts in unconfirmed WNS counties.  
Continue efforts to locate NLEBs in South Carolina and initiate some new mine gating.

Submitted by: Mary Bunch and Jennifer Kindel

Appendix I. Letter from SCDNR Director to SCDHEC Director requesting continued cooperation for WNS testing of bats.

South Carolina Department of  
**Natural Resources**



**DNR**

Alvin A. Taylor  
Director

July 7, 2015

Ms. Catherine Heigel, Director  
SC Department of Health & Environmental Control  
2600 Bull Street  
Columbia, SC 29201

Dear Director Heigel,

The South Carolina Department of Natural Resources (SCDNR) values its cooperative relationship with the South Carolina Department of Health and Environmental Control (SCDHEC). We have often worked together to identify and control wildlife disease outbreaks. We are asking for your assistance again with a very important project, the collection of bats that the public may send to your facility at 8231 Parklane Road in Columbia. For those bats that are not being tested as a potential rabies vector, we ask that you store them in a designated freezer so we can collect them for White-nose Syndrome (WNS) testing.

It is my understanding that your facility had problems with the freezers going out so that prior specimens were lost when they thawed. To assist you with our request, and to make sure future specimens are not lost due to equipment malfunctions, we are offering to supply you with a new mini-freezer dedicated to suspect WNS bats, biohazard bags, and specimen tags so that you do not incur additional costs when collecting these samples for us. If, however, you are limited in space, we would simply supply a collection box to place in one of your regular freezers (sub-zero not required). Our biologist, Mary Bunch, who is located at our Clemson office, will come by once every two months to collect any specimens you have so we can send them off to the South Carolina Wildlife and Disease Service (SCWDS) for testing for WNS. Please respond to advise us if you are able to assist with this effort and if you need us to provide the listed materials.

As you are aware, WNS has devastated the Nation's colonial roosting bat populations and has been recently (2013) identified in South Carolina. The SCDNR has signed an agreement with the United States Fish and Wildlife Service (USFWS), pledging to share data on at-risk, petitioned, and listed species. One such species, the Northern long-eared bat, was recently listed as Threatened under the Endangered Species Act due to decimation from WNS. One way of tracking the spread of this disease and its impact on this species and other bats, is utilizing collected specimens provided by the public for testing. We have several federal grants in progress that are tracking bat mortality so that your cooperation with collecting specimens is a key component. Thank you for your attention to this matter and please contact me if you have any questions or concerns.

Sincerely,

A handwritten signature in dark ink, appearing to read "Alvin A. Taylor".

Alvin A. Taylor  
Director



# South Carolina Department of Natural Resources



**DNR**

Alvin A. Taylor  
Director

Emily C. Cope  
Deputy Director for  
Wildlife and Freshwater Fisheries

South Carolina Department of Natural Resources  
311 Natural Resources Drive  
Clemson, SC 29631  
October 6, 2014

Dear Wildlife Control Professional,

You or your company are listed on the South Carolina Department of Natural Resources (SCDNR) website as a wildlife control specialist that handles nuisance bat jobs. This letter is being sent as a courtesy to help keep you informed on bat related issues in South Carolina.

- White-Nose Syndrome (WNS), a fungal disease of hibernating bats, was confirmed in SC in Pickens County in 2013. In 2014 WNS was confirmed in two additional counties: Oconee and Richland. We must now assume the entire state is WNS positive and appropriate precautions must be followed. Please consult the WNS Decontamination guidelines enclosed for treating materials used on bat exclusions. Please do **not** move bat exclusion materials between states. Never move bats to new locations; you may accidentally speed the spread of WNS. Please periodically check the national WNS website for updates. <https://www.whitenosesyndrome.org/>
- WNS does not affect non-hibernating Mexican free-tailed and evening bats. It does affect big brown, little brown, small-footed, Northern long-eared and tri-colored bats. Big brown bats sometimes have colonies in with free-tailed bat colonies. The fungus that causes WNS has been found on some other bat species with no disease exhibited.
- Due to a significant decline in the formerly abundant Northern long-eared bat (*Myotis septentrionalis*) aka NLEB, the US Fish and Wildlife Service (USFWS) has placed the NLEB on the federal register as *endangered*. The period for public comment has ended and the deadline for a final decision is April 2, 2015. NLEBs have been documented in SC's three mountain counties. NLEB will sometimes use man-made structures and it prefers a forested environment. If you are handling bats in SC mountains please consult w/ USFWS Charleston Office (843) 727-4707.
- The USFWS is currently undertaking a status review for the tri-colored bat (this used to be called the Eastern pipistrelle) (*Perimyotis subflavus*). The tri-colored bat is statewide in SC.
- On-line or web-based minimum standards bat exclusion training will be available soon. The bat standards training was prepared by the National Wildlife Control Operators Association (NWCOA) but you do *not* have to be a member of NWCOA to take the training/certification. The training does include information about WNS. The same bat standards training (in person) will also be available on February 6 at the 2015 Wildlife Expo in Myrtle Beach, SC. This training is not required by the state of South Carolina but it is a good way to remain current and to demonstrate professionalism to future customers.
- A Clemson University graduate student, Glenda Lofink, is interested in surveying Wildlife Control Professionals both before and after any of you take the on-line, web-based training or the in person bat standards training. She can be contacted at [gslofink@aim.com](mailto:gslofink@aim.com)

Sincerely,

Mary Bunch

Region One • 311 Natural Resources Drive • Clemson SC 29631 • 864-654-6738

EQUAL OPPORTUNITY AGENCY

[www.dnr.sc.gov](http://www.dnr.sc.gov)

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Figure 1. Sign (4) provided to Table Rock State Park (includes historic NLEB hibernation site).



**Table Rock State Park  
is home to the federally  
threatened Northern  
long-eared bat and  
several other bat species  
affected by White-nose  
Syndrome (WNS). WNS  
is a fungal disease of  
hibernating bats that has  
been confirmed in bats on  
the park. Please respect  
our bats as they're an  
important part of a  
healthy ecosystem. Do not disturb any  
roosting bats and report any dead bats  
found to park staff.**

**For WNS Information: <https://www.whitenosesyndrome.org/>**



**DNR**

**South Carolina**  
**Just right.**



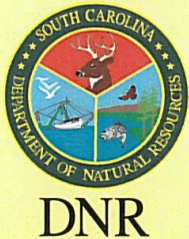


Figure 2. Sign (4) provided to Oconee State Park (we reported a maternity roost tree there in 1998). The park has *Myotis* and *Eptesicus fuscus* occupied bat boxes.



**Oconee State Park is home to the federally threatened Northern long-eared bat and several other bat species affected by White-nose Syndrome (WNS). WNS is a fungal disease of hibernating bats that has been confirmed in bats on the park. Please respect our bats as they're an important part of a healthy ecosystem. Do not disturb any roosting bats and report any dead bats found to park staff.**

**For WNS Information: <https://www.whitenosesyndrome.org/>**



**South Carolina**  
**Just right.**





Figure 3. Updated signs (5) provided to SCPRT for Santee State Park (features a significant winter/summer southeastern bat roost).



# Attention Visitors

## ENTRY PROHIBITED

All caves on this property are closed as part of a national effort to conserve bats and to slow the spread of White-Nose Syndrome.

Rare bats living within these limestone sinks are sensitive to disturbance and are at risk to White-Nose Syndrome (WNS). WNS is a fungal disease that can kill over 90% of a cave's bats and it continues to spread rapidly.



Please help protect our wildlife.



Figure 4. Signage to indicate an underground site is positive for *P.d.*

# Help Prevent The Spread Of White-Nose Syndrome

**This site is positive for the fungus that causes White-Nose Syndrome (WNS) in bats. WNS is often fatal to bats.**

**Fungal spores can be spread by footwear and clothing. Employ good stewardship practices such as cleaning and disinfecting your gear.**



[www.whitenosesyndrome.org](http://www.whitenosesyndrome.org)  
[www.dnr.sc.gov/wildlife/bats/batswns.html](http://www.dnr.sc.gov/wildlife/bats/batswns.html)



**Interim Report**  
**White-nose Syndrome Grants to States**  
**F14AP00731**

South Carolina Department of Natural Resources (SCDNR)  
August 31, 2014-November 30, 2015\*

**Project Title:** South Carolina White-nose Syndrome State Support

*\* This state support grant was extended to December 31, 2015 and is currently undergoing an additional extension to June 30, 2016.*

Objective 1: We proposed to continue to ship rabies negative bats from the South Carolina Department of Health and Environmental Control (SCDHEC) and samples from bat die-offs to the Southeastern Cooperative Wildlife Disease Study (SCWDS).

Accomplishments:

On March 25, 2014 and September 18, 2014, Christy Jeffcoat, supervisor of the virology and rabies lab at SCDHEC, indicated that they would save any colonial cavity roosting species of bat (excluding free-tailed bats) for SCDNR pick-up. Unfortunately a subzero freezer at SCDHEC stopped working and SCDHEC was unable to save any bats from the 2014-15 winter months. They [SCDHEC rabies testing lab] declined my offer to provide them with a small freezer. On July 7, 2015, the SCDNR director sent a letter to the SCDHEC director requesting continued cooperation on WNS surveillance, at the urging of our USFWS liaison (Appendix I). We did purchase coolers in preparation for shipping any suspect bats and SCDHEC saved specimens. Those coolers are earmarked for WNS surveillance and will be useful for future submissions. The only reports of winter/spring dead bats from the public were free-tailed bats that died when a coastal WCO attempted exclusion improperly during cold weather. We also had a report of a “dead” bat on a sidewalk near the stadium at Clemson University however no dead (or live) bat was found. The Clemson University stadium frequently has unwanted free-tailed bats.

Significant deviations:

There were no significant deviations. Although we had no bats saved by SCDHEC due to their freezer failure, we did get confirmation they are once again saving bats.

Objective 2: We proposed to continue outreach to Nuisance Wildlife Control Operators (NWCOs) about bat submissions for WNS and personal decontamination and about upcoming National Bat Exclusion certification on-line training. This includes providing some of the online training for key personnel including one SCDHEC and one SCPRT partner.

Significant deviations:

We had to file an extension for this WNS State Support grant because the NWCOA on-line training is not yet available (part of Objective 2 hinges on this training being available on-line). We will request another timeline extension on this grant. A recent notice from NWCOA informed us that the on-line training will not be available until early next year (2016).

Accomplishments:



On October 8, 2014, we mailed all Wildlife Control Operators (WCOs) on the Wildlife Control Operator list (<http://www.dnr.sc.gov/wildlife/docs/nwco.pdf>) with bats listed under the species handled heading (132 listed) an informational letter, a copy of the National White-Nose Syndrome Decontamination Protocol (printed from the [whitenosesyndrome.org](http://whitenosesyndrome.org) website) and the color copy of the White-Nose Syndrome Fact Sheet, August 2014 at <https://www.whitenosesyndrome.org/resource/white-nose-syndrome-fact-sheet-august-2014>.

The informational letter (Appendix II) included the latest NLEB listing information at the time; it also requested that they cooperate with the Clemson University graduate student interested in surveying them and advised them of upcoming NWCOA minimum bat standards training. The principal investigator reviewed several versions of the pre-training questionnaire, and one version of the post-training questionnaire, prepared by a Clemson University graduate student to test the efficacy of planned NWCOA on-line bat standards training. Because South Carolina does not certify or test WCOs, this is an opportunity to better understand if the training will significantly improve WCO knowledge on exclusion techniques and WNS. Through this grant we provided travel support for the graduate student to attend the NWCOA Wildlife Expo in Myrtle Beach. She did take and complete the NWCOA in-person minimum bat standards training. We also assisted the graduate student in finding a statistician to help her develop the questionnaires.

Objective 3: Conduct winter counts at 4 (or more) known hibernacula (all are man-made structures).

Accomplishments:

In our proposal in the Methods section, we indicated that our partners at the SC National Guard would complete winter bat counts in their 6 underground tunnels. However, the natural resources managers at McCrady Training Site (SC Army National Guard) (SCARNG) were not comfortable conducting the winter bat counts/ WNS surveillance on their own, therefore SCDNR, assisted by a contractor and SCARNG Natural Resource Management staff, conducted the winter bat counts at the 6 tunnels in Richland County. Because we had a *Pseudogymnoascus destructans* -positive bat from an unknown location in Richland County (via a SCDHEC rabies testing submission) last year, we were eager to collect swabs from bats and substrate in our only known underground site in Richland County. All swabs were sent to NWHC for testing for the WNS fungus. Results from the McCrady Training Site swabs (8 big browns and 1 Rafinesque's big-eared bat and 9 substrate) were negative for *P.d.*

Because we wanted to better understand how far WNS has spread into the piedmont of South Carolina, we had planned to do a winter count and swabbing at an Edgefield County goldmine. Unfortunately, the mine ownership changed from a group of amateur gold enthusiasts to a commercial mining company (Uwharrie Resources, Inc.) and that company pushed the adit entrances closed and put a metal grate across the open shaft. The closure was not done using bat-friendly techniques so we did provide Uwharrie Resources Vice President, Mr. John Powers, with Bats and Mines Handbook produced by Bat Conservation International. Because we had no way to access that Edgefield County mine, we sought out another piedmont mine in the slate-belt. We obtained permission to check a mine in Union County. We refer to the site as UN01A; there 11 tri-colored bats were photographed and we collected 8 swabs of bats and 17 of substrate on March 11, 2015. All results of swabs from the Union county mine were negative for *P.d.* The weather was warm and some of the bats were clustered (more typical of summer behavior) and easy to awaken.

Two mines in Oconee County were surveyed on March 12, 2015. One mine (on private land) has a bat-friendly gate and the other mine surveyed (Cheoeend) is un-gated on the Sumter National Forest. We swabbed in the gated mine but didn't have enough swabbing materials to swab in the other mine (but we did observe what appeared to be fungus on the muzzle of one tri-colored bat). Results from the swabbed

mine/ bats in Oconee County were *P.d.* positive. This site is 9 miles from the last WNS confirmed hibernaculum.

We also did a quick entrance survey/observance at the Table Rock State Park cave. No dead bats or flying bats were noted; however a disturbing amount of evidence of human visitation was obvious. There was a worn path into the lower entrance and litter was strewn in the forest near the entrance. The park superintendent and naturalist were informed of the problem the next day (April 17, 2015). Entrance surveys were also done at two gated soapstone mine gates (on the Andrew Pickens District of the Sumter National Forest) and both mine gates were missing their locks. The locks were immediately replaced and some additional steel plates were attached using Quiksteel© to better protect the locks (in case they are being cut rather than unlocked and removed). No bats were seen near the entrance or on the landscape.

In summary, we completed one cave entrance survey in Pickens County, two mine entrance surveys in Oconee County, two Oconee County (mountains) and one Union County (piedmont) mine surveys, and six tunnel surveys in Richland County (sandhills region). Swab results from the NWHC were negative from the Union (piedmont region), and Richland County (sandhills region) sites were negative for *P.d.* However, the results confirmed a new site (in an already WNS confirmed county) in Oconee County. Another partner, Susan Loeb, of the Southern Research Station (USFS), completed the winter count at the main Stumphouse Tunnel (Oconee County) because she sought swabs from another project. She noted a 54% decline in tri-colored bats at this site which was also confirmed as WNS positive based on 3 dead tri-colored bats collected in March 2015 (that site was recorded as suspect in 2014). So we had two more locations within an already WNS-positive county confirmed to harbor *P.d.* but we did not locate any *P.d.* positive sites outside the mountain region this year.

On November 30, 2015 we received a report of bats flying at mid-day, over several previous days, in Northern Greenville County near Oil Camp Creek.

#### Significant deviations:

There were no significant deviations.

Objective 4: Review and update the WNS Response Plan with the participation of our partners. This can include bringing in additional partners.

#### Accomplishments:

The WNS Response Plan revisions were completed via a vendor. This objective was paired with drafting the SC Bat Conservation Plan. In order to be certain that the vendor understood the WNS decontamination protocol, they were required to assist with some winter bat counts. During this funding period, the Northern long-eared bat was listed as federally threatened therefore the change was incorporated into the WNS Response plan. The updated plan is posted on the SCDNR webpage (<http://www.dnr.sc.gov/wildlife/publications/pdf/batwns2015response.pdf>).

#### Significant deviations:

There were no significant deviations.

Objective 5: Develop a working draft Bat Conservation Plan for South Carolina.

#### Accomplishments:



We contracted for the development of a South Carolina Bat Conservation Plan. The request for bids was posted November 2014 and Jennifer Kindel was the successful vendor selected to complete this plan and the updates and revisions for the WNS Response Plan. Species range maps are updated maps based on the State Wildlife Action Plan guild maps; Silas K. Cox, Clemson University Experimental Forest manager (now retired) donated his time and mapping skills to the project. In addition to those from SCDNR, parties providing edits to the document included Dr. Joy O'Keefe, Center for Bat Research, Outreach and Conservation, Dr. Mary K. Clark, Moonlight Environmental Consulting, and Dr. Mark Yates, LaGrange College. On September 29, 2015 version 1 of the South Carolina Bat Conservation Plan was complete and distributed to SCDNR Wildlife Chiefs and assistant chiefs and the Deputy Director and Assistant Deputy Director of Wildlife and Freshwater Fisheries of SCDNR. The SC Bat Conservation Plan Google link (*permanent link TBA*) was also provided to the new Natural Resources manager at SC Parks, Recreation and Tourism and to the South Carolina Forestry Commission. This work is complete although the document will require regular updating to remain meaningful.

#### Significant deviations:

There were no significant deviations.

Objective 6: Provide WNS information to the public via links on the DNR website, in news releases, and on signs at critical sites. This also includes the outreach opportunity provided by the proposed 2015 Bat Blitz at South Carolina's coast.

#### Accomplishments:

The newly revised WNS Response Plan was posted on our SCDNR website. Also, SCDNR created signs (Figures 1 and 2) featuring Northern long-eared bats for two state parks, Oconee and Table Rock, both known to have Northern long-eared bats. Both parks had reported problems with either public or staff disturbance of roosting bats. At the request of SCPRT we also provided some replacement signs for the Santee Limestone Sinks (caves) at Santee State Park. The sign (Figure 3) is an updated version of signs previously posted at the site by SCDNR in 2011.

SCDNR staff created a new bat information link to provide some basic bat information along with bat exclusion information: <http://www.dnr.sc.gov/wildlife/publications/nuisance/SCbatsinbldgs.pdf> The Report a Bat Colony page (which was incorrectly being used by homeowners to report unwanted bats in their homes) was replaced (July 28, 2015) with a new reporting page for reporting successful bat boxes: <http://dnr.sc.gov/wildlife/bats/batbox.html> We also started work on a NLEB page; however we were not able to acquire the GIS map of the NLEB range from the USFWS. We currently provide a link to the USFWS Midwest Office NLEB webpage on the SCDNR webpage.

Interviews on bats/NLEBs of South Carolina were given to The State Newspaper (August 2014) and the Charleston Post and Courier in October 2014.

SCDNR provided support, particularly decontamination materials and information (for example SCDNR staff provided the bat key for Coastal SC and all of the waterproof data sheets) for the 2015 SC Bat Blitz held in Bluffton, SC. The local Blitz committee of Mary Socci (Palmetto Bluff Conservancy/host), Mary K. Clark (Moonlight Environmental Consulting) and Mary Bunch (SCDNR) coordinated on the WNS decontamination related issues/questions. The Blitz was well attended and each team had adequate materials for decontamination. The SC Bat Blitz also provided an opportunity for some limited wing punch sampling to assist Dr Marianne Moore's WNS-related research. Six sets of protein, genotype, qPCR samples were collected and four genotype only (single wing punch) samples were collected for the Moore, Devalos and Russell Skin Immune Proteins study. A post Blitz News Release was distributed in August

2015 and a summary was also sent to the South Carolina Chapter of The Wildlife Society for their newsletter.

Significant deviations:

There were no significant deviations.

Total Cost: \$31,097

Recommendations: Extend the grant deadline in order to complete Objective 2. (Extension documents were submitted 12/3/15.)

Submitted by: Mary Bunch, SCDNR

*NOTE: Appendices removed because they are repeated in the Final Report.*

**Project Statement**  
**White-nose Syndrome Grants to States**  
South Carolina Department of Natural Resources (SCDNR)  
August 31, 2014-September 30, 2015

**Project Title:** South Carolina White-nose Syndrome State Support

**Need**

South Carolina has become one of the latest states to confirm White-nose Syndrome (WNS) within its borders. An Eastern small-footed myotis and a tri-colored bat were discovered at Table Rock in 2013 suffering from WNS. In 2014, SCWDS confirmed a tri-colored bat, collected by SCDNR, as positive for WNS via histopathology. The bat came from an abandoned railroad tunnel at Stumphouse Mountain Heritage Preserve in Oconee County, SC. In March 2014, Oconee and Pickens Counties were also added to the map of confirmed WNS cases in North America. Then in July 2014, SCWDS confirmed that another tri-colored bat—this time from Richland County—tested positive for WNS. All of these bat species are listed in South Carolina’s Draft 2015 State Wildlife Action Plan, and several were listed in the 2005 version. With WNS emerging as an issue nationwide, bats have become a high priority in South Carolina for conservation and monitoring.

South Carolina has seven “cave bat” species. Two species are found statewide—the big brown bat (*Eptesecus fuscus*) and the tri-colored bat—although caves and mines are not found throughout the State. Our other “cave bats” are the Southeastern myotis (*Myotis austroriparius*), Rafinesque’s big-eared bat (*Corynorhinus rafinesquii*), Eastern small-footed myotis (*Myotis leibii*), Northern long-eared myotis (*Myotis septentrionalis*) and little brown bat (*Myotis lucifugus*). Mining was once prevalent in South Carolina, particularly along the Slate Belt that passes diagonally across the State. We have identified 45 underground structures used by bats, although not all are used in winter. Six are caves or cave-like structures (underground boulder piles) and the others are mines or unfinished railroad tunnels.

We currently cannot accurately estimate our cave bat populations. We seldom encounter Northern long-eared bats, (or little browns, big brown bats, or small-footed bats) in hibernacula, yet Northern long-eared bats have been one of the more frequently encountered bats in summer mist netting or trapping in our mountains. Tri-colored bats are typically the species encountered in most of our hibernacula. We noted our first decline in a winter count of tri-colored bats in the Middle Tunnel, Oconee County this year; they declined 70% from the 403 counted in 2012. That site has a bat-friendly gate and numbers had been increasing, post-gating, until WNS was confirmed.

Currently, the South Carolina Department of Natural Resources (SCDNR) does not have a biologist dedicated solely to bat research, bat conservation, and bat management. Instead, the person tasked with bat-related duties divides “bat” time with management of 18 Heritage Preserves, technical assistance, and numerous other nongame taxa issues. The SCDNR and partners did develop a White-nose Syndrome Response Plan in outline format in 2010 and revised it in 2011. SCDNR currently has a draft State Wildlife Action Plan out for public review that includes most of our bat species, but we lack a stand-alone bat conservation plan. Updating the WNS Response plan and developing a bat conservation plan are a priority. SCDNR must also continue WNS surveillance and conduct winter counts at several sites each year. Also, Mary Socci / Palmetto Bluff Conservancy plan to host a Bat Blitz in 2015 in Beaufort County, SC. SCDNR will participate in the event, and at least two of our Heritage Preserves will be included in the sites to be surveyed. We must ensure that no *Pseudogymnascus destructans* is transferred between bats or transported to a WNS-negative state.

## **Project Goals and Objectives**

In order to achieve our long-term goals, we will need to contract or hire a full-time biologist dedicated solely to several of these objectives. The long-term **goals** for this project include: (1) the review and revision of the WNS Response Plan, (2) drafting a SC Bat Conservation Plan, (3) updating and modifying web-based public information, (4) continuing to monitor known (safe-to-enter) hibernacula, (5) giving outreach and education support to Nuisance Wildlife Control Operators (NWCOS) which deal with bats, (6) training SCDNR staff, (7) continuing to do surveillance and submissions of bats to the Southeastern Cooperative Disease Study (SCWDS), and (8) applying disinfection protocols to prevent human-based spread of WNS fungus.

## **Objectives**

1. Continue to ship bat samples from rabies-negative bats submitted to South Carolina Department of Health and Environmental Control (SCDHEC) and samples from cool weather bat die-offs to the Southeastern Cooperative Wildlife Disease Study (SCWDS) for WNS testing.
2. Outreach to Nuisance Wildlife Control Operators (NWCOS) about bat submissions for WNS and personal decontamination and notify them about upcoming National Bat Exclusion certification online training. This includes providing some of the online training for key personnel including one SCDHEC and one SC Parks, Recreation and Tourism (SCPRT) partner.
3. Conduct winter bat counts at 4 sites in winter 2014-15.
4. Review and update the WNS Response Plan with the participation of our partners.
5. Develop a Bat Conservation Plan for South Carolina with a draft completed for review by September 30, 2015.
6. Provide WNS information to the public via links on the SCDNR website, in news releases, and on signs at critical sites. This also includes outreach opportunity provided by the proposed 2015 Bat Blitz along South Carolina's coast.

Objective 1 and Objective 3 address monitoring and disease surveillance under category I of the grant proposal guidelines. Objective 2 (in part) and Objective 4 address Category iii of the grant proposal guideline, as actions to curtail the spread of WNS. Objective 5 satisfies category v of the grant guidelines allowing contractual hiring of a full-time biologist dedicated to developing a Bat Conservation Plan. Objective 6 address category iii and iv of grant guidelines. The Travel in Objective 4 will be used in support of the proposed contractual biologist to participate in a SBDN working group meeting per the grant guidelines under heading b.

## **Project Activities, Methods and Timetable**

### **Project Activities and Methods**

***Objective 1.*** Continue to ship fall, winter, and spring bat samples from non-rabid bats submitted to SC Department of Health and Environmental Control and samples from bat die-offs to the SCWDS for WNS testing.

**Methods** – The SCDNR is a cooperator with the SCWDS. We were the first southeastern state to implement a program of shipping non-rabid bats from SCDHEC’s rabies testing lab to SCWDS for WNS testing. We will continue to ship bat samples from non-rabid bats submitted to SCDHEC (fall, winter and spring) and samples from bat die-offs (year-round) to SCWDS for WNS testing. It is a cost-effective means to follow the spread of WNS. Expenditures will be on shipping and shipping-related materials.

**Objective 2.** Continue to provide outreach to Wildlife Control Operators with updates on the spread of WNS and also the proposed listing of the Northern long-eared myotis (*Myotis septentrionalis*)—aka MYSE—and compliance issues related to the listing per the Endangered Species Act. Expenditures will be for contractual/ postage services. This includes some support of a Clemson University graduate student to evaluate the efficacy of the on-line bat exclusion certification in NWCOs.

**Methods** – It is imperative that we remind these companies about the risks of spreading WNS between colonies and the importance of providing alternate roosts. In South Carolina many of the nuisance colonies are unaffected free-tailed bats (*Tadarida brasiliensis*); however other species are also sometimes excluded by these companies. SCDNR does not certify, test, permit or license NWCOs; therefore, we must contact these companies repeatedly about WNS in order to gain their attention and cooperation.

There are no regulations in SC that prohibit summer exclusions, although SCDNR recommends that exclusions be done only in spring and fall. SCDNR also recommends that alternate roosts (bat boxes) be placed in the area prior to exclusion. Outreach will include notifying companies interested in bat exclusions that new online certification will be available. Outreach will also include a summary of MYSE distribution in the State and Endangered Species Act (ESA) compliance information. Expenditures will be on postage, copying, and online bat exclusion training/certification for 10 people. That includes the project leader, the bat conservation plan biologist, a Clemson University graduate student working on a NWCO/bat project, one SCDHEC and one SCPRT partner, and other key SCDNR staff tasked with urban wildlife-related duties.

**Objective 3.** Conduct winter counts at 4 (or more) known hibernacula (all are man-made structures).

**Methods** – In February or March, staff or partners will complete winter bat counts. Our partners at the SC National Guard will do winter counts at their tunnels at McCrady Training Site (there are 6 underground tunnels in close proximity which will be counted as one site); they are minor hibernacula that sometimes have Rafinesque's big-eared bats, big brown bats, and an occasional tri-colored bat. Three private goldmines are slated for surveys; one of which is in Edgefield County, a minor hibernaculum for tri-colored bats. Because this is a heavily disturbed site, swabbing is permissible. We will also do a winter entrance count at Table Rock cave. WNS-suspect bats will be sampled for testing (via the SCWDS lab) in counties in which WNS has not yet been confirmed or in species not previously confirmed as WNS-positive in SC. Currently we do not encounter bat species determined to be Endangered or Threatened per the ESA. We do sometimes encounter *Myotis septentrionalis*, usually as a single individual. No MYSE will be collected for WNS testing unless found dead. All bats are photographed during our winter counts. All winter count information will be made available to NABat database. The federal decontamination protocol will be followed per the WNS National Plan. Collection and submissions will be per the SCWDS guidelines for WNS submissions. (Dr. Lisa Last is our primary contact for submissions and testing.)

**Objective 4.** Review and update the WNS Response Plan with the participation of our partners. This can include bringing in additional partners. The proposed listing of MYSE will influence the new plan.

**Methods** – The current WNS Response Plan will be circulated to existing partners, and additional partners will be solicited and tasked with modifying the document based on current information. Partners can include government agencies, non-governmental organizations (NGOs), colleges and universities, and representatives of professional organizations. It is critical to have this done prior to the proposed Bat Blitz in 2015. The Bat Conservation Plan biologist will be the primary author and coordinator for updating the WNS Response Plan. The SC Response Plan will require approval by the SCDNR Director.

**Objective 5.** Develop a working draft Bat Conservation Plan for South Carolina.

**Methods** – A Bat Conservation Plan biologist will work with staff and partners to consolidate species information and develop a working document that provides guidelines for land managers and homeowners. This will be the primary expenditure for this project with \$30,000 directed to this effort in order to hire or contract a person devoted solely to objectives 3, 4, 5 and 6. Responsibilities for South Carolina's Natural Resources are spread out over 4 different state agencies (SCDNR, SCPRT, SCDHEC, and the South Carolina Forestry Commission (SCFC). Developing this plan will require participation and some agreement between these agencies for an effective plan.

**Objective 6.** Provide WNS information to the public via links on the SCDNR website, news releases, and signs at critical sites. This objective also includes decontamination support and outreach associated with the Beaufort, SC Bat Blitz in July 2014. Expenditures will be for supplies and materials.

**Methods** – We will use existing WNS information and education materials as much as possible for efficiency. Through news releases, interviews and our website, we will inform the public about WNS and where to call should they encounter unusual bat die-offs. This outreach will also include some signage for Table Rock State Park that explains the importance of bats and that many of the bats there are becoming rare and must be conserved.

## ***Timetable***

Sept 2014	Contact NWCOs with WNS updates, current disinfection information, and information about online bat exclusion certification, and the deadline extension for MYSE listing under the ESA.
	Initiate the contract or hiring process for a Biologist dedicated to this project.
Oct 2014	Order decontamination materials and supplies needed for winter counts and SCWDS submissions.
	Hire/contract biologist tasked with drafting bat conservation plan and updating Response Plan.
Nov 2014	Staff and cooperators will provide available information to the Bat Conservation Plan Author.
	Request permission from landowners to access mines slated for winter counts.
	Develop draft information for signage for Table Rock State Park and submit to SCPRT for approval (Objective 6).
Dec 2014	If the online Bat Exclusion certification is available, make it available to key staff and a SCPRT and SCDHEC partner (to be determined by their respective agency) for completion.
Jan 2015	Pick up rabies-negative “cave” bats from SCDHEC and ship them to SCWDS for WNS testing.
	Circulate and review draft SC WNS Response Plan (Agency and NGO partners)
	Update SCDNR web pages with most current WNS information.
	Order signs for Table Rock State Park.
Feb 2015	Continue contact with NWCOs regarding WNS and proper exclusion practices.
	Erect signs at Table Rock State Park.
Mar 2015	Conduct winter counts/WNS surveillance. This may include swabbing bats in an Edgefield County mine (pending landowner permission).
	Submit suspect bat or samples from suspect bats to SCDWS for WNS testing if previously unreported species or new county.
Apr 2015	Complete a news release regarding the distribution of WNS in SC.
May 2015	SC WNS Plan submission for final approval.
	Initial draft of SC Bat Conservation Plan circulated among Agency/NGO/Stakeholder partners for review/edits.
	Pick up rabies-negative “cave” bats from SCDHEC and ship them to SCWDS for WNS testing.
Jun 2015	Report on WNS testing (new records) and submit winter bat count information to NABat database.
Jul 2015	Continued work on SC Bat Conservation Plan.
	Conduct Bat Blitz in Beaufort/Jasper County, SC.
Aug 2015	Continued work on SC Bat Conservation Plan.
Sept 2015	Submit final report for SC WNS State Support Grant.
	Completion of working draft for SC Bat Conservation Plan.

## **Schedule and Cost**

Objective 1	Supplies and Materials:	\$500.00
	Contractual (shipping)	\$1,000.00
Objective 2	Contractual	\$8,500.00
Objective 3	Supplies and Materials:	\$500.00
	Contractual	\$500.00
Objective 4	Supplies and Materials	\$1,000.00
	Contractual	\$5,000.00

	Travel	\$1,000.00
Objective 5	Contractual	\$30,000.00
Objective 6	Supplies and Materials	\$3,000.00

Total Cost: \$51,000

### **Location**

Objective 1 – Statewide

Objective 2 – Statewide

Objective 3 – Oconee, Pickens, Edgefield, Richland Counties, SC

Objective 4 – Statewide

Objective 5 – Statewide

Objective 5 – Statewide

### **South Carolina White-nose-related Non-federal Expenditures 2011-2013**

Not known at this time.

### **Personnel**

- Project Leader – Mary Bunch (SCDNR Heritage Preserve Manager)
- Other SCDNR staff – Lex Glover, Al Segars, Sam Chappellear, Sam Stokes, Michael Small, Tom Swaynham, and others as needed.

### **Partners/Agencies/ NGOs**

- Dr. Susan Loeb, Southern Research Station (USFS)
- SC Army National Guard
- Furman University
- SC Parks Service
- US Forest Service
- Ledyard Family
- Southeastern Cooperative Wildlife Disease Study
- SC Department of Health and Environmental Control
- Dr. Greg Yarrow, Clemson University, Forestry and Natural Resources
- Glenda Lofink, Clemson University graduate student
- SC Forestry Commission
- Mary Socci/Palmetto Bluff Conservancy (2015 Bat Blitz host)
- Naturaland Trust
- The Nature Conservancy